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Canadian Forestry Service-Maritimes

TECHNICAL NOTE

FOREST TREE NURSERY PRODUCTION AND SHIPMENTS IN THE MARITMES, 1986

There are presently 20 forest tree nurseries in the Maritimes, 5 producing both container and bareroot stock and 15 producing solely container stock.

In 1986, 81.7 million seedlings were shipped for planting from Maritime forest tree nurseries, of which 67 million were container stock (Table 1). Seventy-five percent of this container stock was overwintered during 1985-86. Production, by species, was 58% black spruce, 13% jack pine, 8% red pine, 7% white spruce, and 5% red spruce (Table 2). The proportion of container stock is continuing to increase in the Maritimes. It reached 82% in 1986 (Table 1,2) as compared with 77% in 1985, 62% in 1979, and 17% in 1975.

The 1986 seedling shipments for New Brunswick, Nova Scotia, and Prince Edward Island were 68, 29, and 3%, respectively (Table 3).

STOCK QUALITY TESTING AND TRAINING FACILITY (A NEW TOOL)

During 1986-87, 77 million container seedlings were overwintered in Maritime forest tree nurseries, 15% more than last year. The capability to overwinter container crops safely has become a major concern to nursery managers because of the dramatic increase in this approach to seedling production. In response to this concern, a regional facility to monitor stock quality has been established at the CFS-M Acadia Forest Experiment Station.

This Stock Quality Testing and Training Facility was established as a Job Development Project between the Maritime Forest Ranger School and the Canada Employment and Immigration Commission. Two trainees were hired from February 1986 to June 1987, and another two from March 1987 to April 1988.

The primary objective for funding this Project is to provide training for nursery technicians and foresters. However, the purposes of establishing a Regional facility to monitor stock quality include:

1. Develop and apply stock testing procedures to help reduce overwintering losses of container stock by
   - Monitoring bud development and frost hardiness of seedlings in the fall so the nursery manager can maximize the overwintering capability of crops,
   - Screening overwintered crops in spring for damage to prevent poor quality stock being outplanted;

NURSERIES ■

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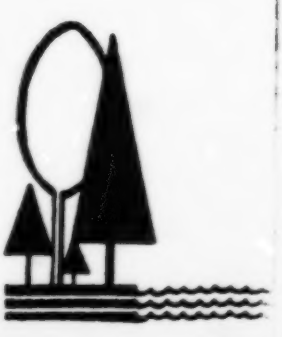

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2. Conduct operational research relating nursery practice to stock quality and plantation performance by
   - Testing and planting selected crops during the planting season,
   - Refining the screening process by standardizing stock quality parameters; and
3. Screen crop conditions, including pest problems in Atlantic forest nurseries, thereby enhancing the CFS-Maritimes program in troubleshooting and technology transfer.

Spring testing: Evaluate overwintering damage

For 1986, only container stock from New Brunswick nurseries was monitored but this service was extended to all forest nurseries in the Atlantic Region in 1987. Early in the spring of 1986 and 1987, crops were tested for winter injuries, particularly those that would be reflected in root growth and bud flushing. Similar testing was conducted for black spruce crops destined for summer planting. Test plantations were also established to determine if correlations existed between the parameters measured and plantation performance.

Fall testing: Maximize overwintering capability

In the fall of 1986, bud development and frost hardiness of containerized crops to be overwintered were monitored. The data collected so far confirms that the use of Extended Greenhouse Culture (EGC) helps maximize bud development and frost hardiness. Although outside crops developed buds and frost hardiness more quickly than those kept in greenhouses, needle primordia counts were lowest for outside crops, slightly higher in cold houses or unheated greenhouses, and highest in heated greenhouses. Furthermore, some of the crops placed outside in late summer suffered frost injury which showed that container crops could benefit from cover in the fall. This practice helps avoid damage from early fall frosts and allows seedlings to develop more resistance to other stresses.

Frost hardiness: Tops and roots

A 'Container Seedling Update'was hold in 1986 at the Maritime Forest Ranger School to review current techniques for Extended Greenhouse Culture and application of the electrolytic conductivity method for testing frost hardiness of seedling tops. S.J. Colombo, Ontario Ministry of Natural Resources, presented valuable information on these techniques that he had developed. We also included information on the development and control of dormancy and ways to protect overwintering stock.

To date, seedlings grown in EGC have been monitored only for development of frost hardiness in tops. In the Update, a problem was identified with root hardiness and potential freezing damage to overwintering crops, particularly EGC crops taken outside in very cold weather. Consequently, another Container Seedling Update has been organized for July 1987, which will focus on roots and overwintering problems. The information will include how to measure damage to roots, its importance to plantation establishment, and what can be done to prevent damage. It is intended as a further step toward understanding crop hardiness, successful overwintering, and the application of stock testing as a tool for improving stock quality and plantation performance.

SPECIAL PROBLEM: WEEDS IN CONTAINER CROPS

The overwintering of container seedlings may result in weed problems, especially if the seedlings remain in the holding areas for an extended length of time in the following growing season. Extensive research is presently underway to examine weed problems in forest tree nurseries. The Canadian Forest Tree Nursery Weed Control Committee's 4th annual Meeting will be held in Longueil, Quebec on July 21-22, 1987 (for further information, please contact J.P. Campagna, Ministere de L'energie et des Resources, 1690 Grand Cote, Berthierville, Quevbec, J0K 1A0, (514) 695-0500).

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June 1987

Table 1. Shipments of seedlings from Maritime forest nurseries by province, agency, and production type, 1986

Province and agency	Seedling shipment ('000)			
	Container			
	Overwinter	Current	Bareroot	Total
NEW BRUNSWICK				
N.B. Natural Resources & Energy - Kingsclear	9 587	4 155	4 463	18 205
- Madran	4 933	3 160		8 093
- Kent	2 660	3 281		5 941
Frasers Inc.	5 606			5 606
Georgia Pacific Corp.	1 000			1 000
J.D. Irving Ltd. - Juniper	4 223		5 693	13 803
- Sussex	250	3 887		250
MacTavish Equipment Ltd.	240			240
Mann Brothers	350			350
NBIP Forest Products Ltd.	1 085			1 746
Valley Forest Products Ltd.	300	661		300
TOTAL	**30 234**	**15 144**	**10 156**	**55 534**
NOVA SCOTIA				
N.S. Lands & Forests - Lawrencetown	120		2 624	2 744
- Strathlorne	6 013		1 397	7 410
- Wittenburg	4 429	65		4 494
Bowater Mersey	875			875
Morrison's Forest Nursery	1 500			1 500
Octa Evergreens Ltd.	750	150		900
Scott Paper Inc.*	2 810	1 415		4 225
Westenenk's Forest Nursery	1 890			1 890
TOTAL	**18 387**	**1 630**	**4 021**	**24 038**
PRINCE EDWARD ISLAND				
J.F. Gaudet Forest Nursery	1 652		457	2 109
TOTAL	**1 652**		**457**	**2 109**
GRAND TOTAL	**50 273**	**16 774**	**14 634**	**81 681**

* 1.75 million trees shipped to Maine.

Table 2. Shipments of seedlings from Maritime forest nurseries by species and production type, 1986

Species	Seedling shipment ('000)			
	Container			
	Overwinter	Current	Bareroot	Total
Black spruce	32 332	11 129	4 340	47 801
Red spruce	3 177	130	461	3 768
Norway spruce	501	1 193	192	1 886
White spruce	1 699	140	4 092	5 931
Balsam fir	957		1 556	2 513
Fraser fir	80			80
Austrian pine	41			41
Jack pine	8 814	1 090	1 502	11 406
Red pine	2 196	2 151	1 991	6 338
Scots pine	46		72	118
White pine	1		219	220
Eastern larch	277	941	182	1 400
Japanese larch	110			110
Hybrid Poplar			27	27
Miscellaneous	42			42
TOTAL	**50 273**	**16 774**	**14 634**	**81 681**

Table 3. Shipments of seedlings from Maritime forest nurseries by species and province, 1986

Species	Seedling shipment ('000)			
	New Brunswick	Nova Scotia	Prince Edward Island	Total
Black spruce	33 964	13 314	523	47 801
Red spruce	130	3 638		3 768
Norway spruce	1 193	693		1 886
White spruce	3 349	2 119	463	5 931
Balsam fir	1 790	497	226	2 513
Fraser fir	80			80
Austrian pine			41	41
Jack pine	10 974	432		11 406
Red pine	2 704	3 042	592	6 338
Scots pine	112	6		118
White pine	5	157	58	220
Eastern larch	1 193	28	179	1 400
Japanese larch		110		110
Hybrid poplar			27	27
Miscellaneous	40	2		42
TOTAL	55 534	24 038	2 109	81 681

Table 4. Container seedlings overwintered during 1986-87 in the Maritimes by province and agency

Province	Agency	('000)
NEW BRUNSWICK		
	N.B. Natural Resources & Energy - Kingsclear	13 832
	- Madran	5 150
	- Kent	4 000
	Frasers Inc.	8 245
	Georgia Pacific Corp.	900
	J.D. Irving Ltd. - Juniper	7 501
	MacTavish Equipment Ltd.	415
	Mann Brothers	400
	NBIP Forest Products Ltd.	757
	Sussex	985
	Valley Forest Products Ltd.	300
TOTAL		42 485
NOVA SCOTIA		
	N.S. Lands & Forests -Lawrencetown	2 100
	-Strathlorne	12 400
	-Wittenburg	5 324
	Bowater Mersey	875
	Morrison's Forest Nursery*	1 700
	Octa Evergreens Ltd.	1 135
	Scott Paper Inc.	6 925
	Westenenk's Forest Nursery*	1 725
TOTAL		32 184
PRINCE EDWARD ISLAND	J.F. Gaudet Forest Nursery	2 578
TOTAL		2 578
GRAND TOTAL		77 247

* These nurseries overwinter their container stock 2 winters, so they always have 2 ages of stock present on-site.

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